WHAT IS CLAIMED IS:

1. A solid-state color imaging apparatus comprising:

a solid-state imaging device including a plurality of photoelectric converters arranged in an array and color filters attached to front faces of the respective photoelectric converters, the color filters being repeatedly arranged in two dimensions, p×q pixels (where p is a natural number and q is a natural number) in the solid-state imaging device in which p pixels are arranged in a horizontal direction and q pixels are arranged in a vertical direction forming a basic unit of a pixel adding area;

means configured to have an arrangement in which all the basic units of the pixel adding area are repeatedly arranged in two dimensions, being shifted from each other in the horizontal and vertical directions and overlapping with each other; and

means for adding together all the pixels corresponding to part of the color filters for the same color in each of the basic units of the pixel adding area.

2. The solid-state color imaging apparatus of claim 1, wherein all the pixels in an effective area of the solid-state imaging device are subjected to the pixel addition.

3. The solid-state color imaging apparatus of claim 1, wherein the basic units of the pixel adding area overlap with each other such that the resultant pixels reduced in number and obtained by the pixel addition are regularly arranged.

4. The solid-state color imaging apparatus of claim 1, wherein the color filters are repeatedly arranged in two dimensions such that two rows and two columns constitute one unit of the color filter arrangement,

p×q pixels (where $p = 4n+1$, n is a natural number, $q = 4m+1$ and m is a natural

number) in the solid-state imaging device form a basic unit of the pixel adding area,

all the basic units of the pixel adding area are repeatedly arranged in two dimensions, being shifted from each other by (p+1)/2 pixels in the horizontal direction and by (q+1)/2 pixels in the vertical direction and overlapping with each other, and

a pixel corresponding to one of the color filters located at the center of each of the basic units in both the horizontal and vertical directions and pixels corresponding to part of the color filters for the same color located apart from the color filter located at the center by even numbers of rows and columns are added together in each of the basic units of the pixel adding area.

5. The solid-state color imaging apparatus of claim 4, wherein the color filters are arranged in the manner of a Bayer arrangement.

6. The solid-state color imaging apparatus of claim 4, wherein the unit of the color filter arrangement in two rows and two columns represents a combination of four colors of cyan, magenta, yellow and green.

7. The solid-state color imaging apparatus of claim 4, wherein one basic unit of the pixel adding basic area is constituted by five rows and five columns.

8. The solid-state color imaging apparatus of claim 1, wherein the color filters are repeatedly arranged in two dimensions in the manner that, if one direction is defined as a row and another direction perpendicular to said direction is defined as a column, four rows and two columns form one unit of the color filter arrangement, one of the color filters at the first row and the first column and one of the color filters at the third row and the second

column are for the same color, one of the color filters at the first row and the second column and one of the color filters at the third row and the first column are for the same color, one of the color filters at the second row and the first column and one of the color filters at the fourth row and the second column are for the same color, and one of the color filters at the second row and the second column and one of the color filters at the fourth row and the first column are for the same color,

p×q pixels (where p = 4n+2, n is a natural number, q = 4m+2 and m is a natural number) in the solid-state imaging device form a basic unit of the pixel adding area,

all the basic units of the pixel adding area are repeatedly arranged in two dimensions, being shifted from each other by p/2 pixels in the horizontal direction and by q/2 pixels in the vertical direction and overlapping with from each other, and

all the pixels corresponding to part of the color filters for a color represented by the pixel at the first row and the first column, the first row and the second column, the second row and the first column or the second row and the second column in each of the basic units of the pixel adding area in p rows and q columns are added together in the same pattern in all the basic units of the pixel adding area, and the pixels for only one color are added together in each of the basic units of the pixel adding area.

9. The solid-state color imaging apparatus of claim 8, wherein the arrangement of part of the color filters in the front two rows and two columns in the unit of the color filter arrangement in four rows and two columns represents a combination of four colors of cyan, magenta, yellow and green.

10. The solid-state color imaging apparatus of claim 8, wherein one basic unit of the pixel adding area is constituted by six rows and six columns.

11. The solid-state color imaging apparatus of claim 1, wherein the color filters are repeatedly arranged in two dimensions and two rows and two columns form one unit,

p×q pixels (where p = 4n−1, n is a natural number, q = 4m−1 and m is a natural number) in the solid-state imaging device form a basic unit of the pixel adding area,

the basic unit of the pixel adding area is repeated in two dimensions, being shifted from one another by alternately (p−1)/2 pixels and (p+3)/2 pixels in the horizontal direction and by alternately (q−1)/2 pixels and (p+3)/2 pixels in the vertical direction and overlapping with one another, and

all the pixels corresponding to part of the color filters located at the respective four corners in diagonal directions and corresponding to part of the color filters for the same color located apart from the pixels at the four corners by even numbers of rows and columns are added together in the basic unit of the pixel adding area.

12. The solid-state color imaging apparatus of claim 11, further comprising means for filtering an output signal from the solid-state imaging device such that the resultant pixels reduced in number and obtained by the pixel addition are arranged at a uniform density in two dimensions.

13. The solid-state color imaging apparatus of claim 11, further comprising means for alternately changing a tap coefficient or a tap number for use in digital filtering in the horizontal direction, the vertical direction, or both the horizontal and vertical directions in a cycle corresponding to one pixel included in an output from the solid-state imaging device subjected to the pixel addition, the means being provided for a digital image signal processing for converting an output signal from the solid-state imaging device into a digital

luminance signal, the digital filtering being performed for generating a signal for correcting the contour of the luminance signal.

14. The solid-state color imaging apparatus of claim 11, wherein the color filters are arranged in the manner of a Bayer arrangement.

15. The solid-state color imaging apparatus of claim 11, wherein the unit of the color filter arrangement in two rows and two columns represents a combination of four colors of cyan, magenta, yellow and green.

16. The solid-state color imaging apparatus of claim 11, wherein one basic unit of the pixel adding area is constituted by four rows and four columns or eight rows and eight columns.

17. The solid-state color imaging apparatus of claim 1, further comprising means for switching an output from the solid-state imaging device between an output in which pixels are added together and an output in which all the pixels are independent of each other.

18. A solid-state color imaging apparatus comprising:

a solid-state imaging device including a plurality of photoelectric converters arranged in an array and color filters attached to front faces of the respective photoelectric converters, the color filters being repeatedly arranged in two dimensions in the manner that, if one direction is defined as a row and another direction perpendicular to said direction is defined as a column, four rows and two columns form one unit of the color

filter arrangement, one of the color filters at the first row and the first column and one of the color filters at the third row and the second column are for the same color, one of the color filters at the first row and the second column and one of the color filters at the third row and the first column are for the same color, one of the color filters at the second row and the first column and one of the color filters at the fourth row and the second column are for the same color and one of the color filters at the second row and the second column and one of the color filters at the fourth row and the first column are for the same color, p×q pixels (where p = 2n+2, n is a natural number, q = 2m+2 and m is a natural number) in the solid-state imaging device in which p pixels are arranged in a horizontal direction and q pixels are arranged in a vertical direction forming one basic unit of a pixel adding area;

means for adding together all the pixels for a color represented by one of the color filters at the first row and the first column and one of the color filters at the third row and the second column in the unit of the color filter arrangement;

means for adding together all the pixels for a color represented by one of the color filters at the first row and the second column and one of the color filters at the third row and the first column in the unit of the color filter arrangement;

means for adding all the pixels for a color represented by one of the color filters at the second row and the first column and one of the color filters at the fourth row and the second column in the unit of the color filter arrangement; and

means for adding all the pixels for a color represented by one of the color filters at the second row and the second column and one of the color filters at the fourth row and the first column in the unit of the color filter arrangement.

19. The solid-state color imaging apparatus of claim 18, wherein part of the color filters arranged in the front two rows and two columns in the unit constituted by four rows

and the two columns represents a combination of four colors of cyan, magenta, yellow and green.

20. The solid-state color imaging apparatus of claim 18, further comprising means for switching an output from the solid-state imaging device between an output in which pixels are added together and an output in which all the pixels are independent of each other.